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IS 8020 (1976): Baseplate, Dental [MHD 8: Dentistry]



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Indian Standard
SPECIFICATION FOR
BASEPLATE, DENTAL

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SPECIFICATION FOR BASEPLATE, DENTAL

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Indian Standard

SPECIFICATION FOR BASEPLATE, DENTAL

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 January 1976, after the draft finalized by the Dental Materials Sectional Committee had been approved by the Chemical Division Council.

0.2 The baseplate is the foundation on which an occlusal rim is built or on which the trial denture is set up.

0.3 In the preparation of this standard considerable assistance has been derived from GG-B-00120b (DSA-DM) April 16, 1969 'Federal Specification for baseplate, dental' issued by the Federal Supply Service, USA.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for dental baseplates.

2. TYPES

2.1 The baseplates shall be of the following two types:

- a) *Type 1* — Upper form, and
- b) *Type 2* — Lower form.

3. REQUIREMENTS

3.1 Finish — Finish shall be good. Surfaces of the baseplates shall be smooth, and baseplates shall be free from blisters, cracks or crinkles. The baseplates shall be free from defects which would detract from their appearance or impair their serviceability.

*Rules for rounding off numerical values (*revised*).

3.2 Colour — The baseplates shall be preferably pink in colour.

3.3 Effect of Cooling — The baseplates shall readily revert to their original hardness, when tested as prescribed in Appendix A.

3.4 Adaptability — The baseplates shall be easily adapted and shall not tear, blister, discolour or stick, when heated to a talc dusted test model; and shall neither warp nor lift away from the test model at any point, when tested as prescribed in Appendix B. Baseplates shall neither char nor burn when luted to test model with a hot spatula.

3.5 Transverse Strength — Transverse strength shall be not less than 1.75 kgf when tested as prescribed in Appendix C.

3.6 Bending Test — The baseplates shall bend 10 ± 5 mm when tested as prescribed in Appendix D.

3.7 Spring Back — The opening of the baseplates shall not exceed 65 mm when tested as prescribed in Appendix E.

3.8 Working Qualities — Baseplates, when tested as prescribed in Appendix F, shall comply with the following requirements.

3.8.1 Baseplates shall be capable of being adapted to a wet or dry (without talc dust) stone cast without adhering to cast.

3.8.2 Heated baseplates shall not adhere to fingers when adapting to cast.

3.8.3 The finished adapted baseplate (tray) shall not distort when immersed in water for 10 minutes.

4. KEEPING QUALITY

4.1 The material shall comply with the requirements of the specification when tested after one year from the date of manufacture when stored at room temperature.

5. PACKING AND MARKING

5.1 Packing — The baseplates shall be packed in cardboard boxes, each containing 8 uppers and 4 lowers interleaved with butter paper.

5.2 Marking — Each box shall be securely closed and shall bear legibly and indelibly the following information:

- a) Name and type of the material;
- b) Name of the manufacturer, and his recognized trade-mark, if any;
- c) Number of baseplates in each box;

- d) Batch number;
- e) Date of manufacture; and
- f) Storing notice worded as under;

‘STORE IN A COOL PLACE’.

5.2.1 The boxes may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6. SAMPLING

6.1 Representative samples of the material shall be drawn as prescribed in Appendix G or as agreed to between the purchaser and the supplier.

A P P E N D I X A

(Clause 3.3)

METHOD OF TEST FOR EFFECT OF COOLING

A-1. PROCEDURE

A-1.1 Heat the baseplate in an oven maintained at $90 \pm 2^{\circ}\text{C}$ for 30 minutes and then cool it. After cooling, the baseplate shall readily revert to the original hardness.

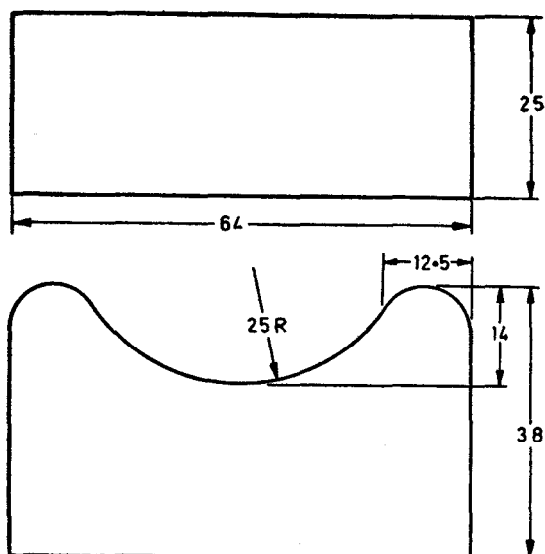
A P P E N D I X B

(Clause 3.4)

METHOD OF TEST FOR ADAPTABILITY

B-1. APPARATUS

B-1.1 Construct a test model of a suitable hard wood to the shape and dimensions given in Fig. 1.



All dimensions in millimetres.

FIG. 1 TEST MODEL FOR ADAPTABILITY TEST

B-2. PROCEDURE

B-2.1 Place a test specimen of baseplate material on a test model that has been preheated to $90 \pm 2^\circ\text{C}$ for at least 1 hour, and then place in an oven for 10 minutes at $90 \pm 2^\circ\text{C}$. Remove the test model and specimen and allow to cool for 1 hour to room temperature.

A P P E N D I X C

(Clause 3.5)

METHOD OF TEST FOR TRANSVERSE STRENGTH

C-1. PROCEDURE

C-1.1 Suspend a test specimen of baseplate material across a bridge of 50 mm using 5 mm glass rods for supports. Apply load in the middle of the strip by a plunger with its end consisting of an edge 3 mm radius and 13 mm length. Pour lead shots into a can on top of the plunger at a rate of 1.5 kg per minute until the specimen breaks. The combined masses of the plunger and shots will give the transverse strength of the specimen.

C-2. CALCULATION

C-2.1 Report the average of three tests as the transverse strength of the baseplates.

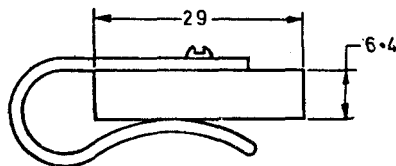
APPENDIX D

(Clause 3.6)

METHOD OF TEST FOR BENDING

D-1. PROCEDURE

D-1.1 Place a whole upper plate on a smooth flat surface and flame with a bunsen burner until softened; turn over and flame again until softened. Put aside to set at room temperature (21 to 27°C) for exactly 1 hour. After 1 hour, place the baseplate in an oven at $37.0 \pm 0.5^{\circ}\text{C}$ for exactly 10 minutes. The baseplate shall stand on edge in a narrow slot so that it will be heated evenly. When heated for 10 minutes, place the plate in a horizontal position with one slanting edge inserted into a slot 11 mm deep and just a little thicker than the baseplate to permit easy insertion and removal. Attach a weight and spring (see Fig. 2) totalling 34 to 35 g to the baseplate at the farthest point from the slot so that the edge of the weight enclosed by the spring shall be flush with the edge of the baseplate. The slot shall be at sufficient distance above the floor of the oven to allow for sagging of the baseplate when heated. The oven shall be regulated so that the temperature is constant at 37°C when thermometer bulb is at the same level as the baseplate. The baseplate shall remain under the weight for exactly 5 minutes and shall then be removed to room temperature to cool until rigid. Measure with a scale the number of millimetres the edge of the plate has warped from the horizontal. This shall be done by placing the flat surface, which was in the slot, on a glass plate so that the warped section extends upward. Measure the height of the other edge from the glass.



All dimensions in millimetres.

FIG. 2 BENDING TEST AID

APPENDIX E

(Clause 3.7)

METHOD OF TEST FOR SPRING BACK

E-1. APPARATUS

E-1.1 The apparatus shall consist of two brass discs, one 127 mm in diameter and 6.4 mm in thickness, and the other 32 mm in diameter and 12.7 mm in thickness. The discs are tapped and joined together at the centre of each by means of a M4-countersunk head screw (*see IS: 1365-1968**) extending through the large disc and approximately three-fourths of the way through the small disc.

E-1.2 Vernier Caliper

E-2. PROCEDURE

E-2.1 Submerge the apparatus at least 50 mm below the water level of a water-bath held at $55 \pm 1^{\circ}\text{C}$ with the large disc facing down. Cut a flat strip specimen 13×89 mm from the test baseplate. Condition the strips in the bath for 10 minutes. Wrap the flat surface of the specimen around the circumference of the small disc and release the hold within 5 seconds. Allow one minute in bath for specimen to spring back. Then remove the specimen with care not to distort it, and let cool to room temperature for one hour. Measure the opening from the outside edges of the specimen strip with a vernier caliper. Test 3 specimens and average their values.

APPENDIX F

(Clause 3.8)

METHOD OF TEST FOR WORKING QUALITIES

F-1. PROCEDURE

F-1.1 Prepare an edentulous cast of artificial stone and allow cast to set for at least one hour before performing tests. Select the applicable baseplate and centre it on the dry (undusted) stone cast, and gently heat (without charring) the top of the baseplate with a bunsen flame, so that the heat penetrates only half the thickness of the baseplate.

*Specification for slotted countersunk head and slotted raised countersunk head screws (diameter range 1.6 to 20 mm) (*second revision*).

Turn the baseplate over, place in the same position on cast. Evenly heat the baseplate again, until the baseplate begins to flow into the shape of the cast by virtue of its own weight. Moisten the fingers with water and by alternately applying heat and finger pressure to the baseplate, adapt the baseplate to the shape of the cast. The baseplate shall not adhere to the fingers during the heating and adapting procedures. When the adaption is complete, lift from cast and examine for adherence of baseplate to cast. The same procedure shall be used in examining for adherence of baseplate to a wet model by soaking stone cast (model) in water for 2 minutes prior to any adapting. Immediately submerge baseplate in water at a temperature of 10°C for 10 minutes. At the end of the time, remove baseplate from water and adapt again to original stone cast and examine for distortion.

A P P E N D I X G

(Clause 6.1)

SAMPLING OF BASEPLATE, DENTAL

G-1. GENERAL REQUIREMENTS OF SAMPLING

G-1.0 In drawing, preparing, storing and handling test samples, the precautions and directions given in **G-1.1** to **G-1.6** shall be observed.

G-1.1 Samples shall not be taken in an exposed place.

G-1.2 The sampling instrument shall be clean and dry.

G-1.3 Precautions shall be taken to protect the samples, the material being sampled, the sampling instrument and the containers for samples from adventitious contamination.

G-1.4 To draw a representative sample, the contents of each container selected for sampling shall be mixed thoroughly.

G-1.5 The samples shall be placed in clean, dry, airtight glass or other suitable containers.

G-1.6 Each sample container shall be sealed airtight with a suitable stopper after filling, and marked with full details of sampling, the date of sampling and the year of manufacture of the material.

G-2. SCALE OF SAMPLING

G-2.1 Lot — All the containers in a single consignment of the material of the same type and belonging to the same batch of manufacture shall constitute a lot. If a consignment is declared or known to consist of different batches of manufacture, the containers belonging to the same batch shall be grouped together and each such group shall constitute a separate lot.

G-2.1.1 Samples shall be tested from each lot for ascertaining conformity of the material to the requirements of the specification.

G-2.2 The number of containers (n) to be selected from the lot shall depend on the size of the lot (N) and shall be as given in Table 1.

TABLE 1 NUMBER OF CONTAINERS TO BE SELECTED FOR SAMPLING

LOT SIZE	NUMBER OF CONTAINERS TO BE SELECTED
N	n
(1)	(2)
Up to 50	3
51 to 200	4
201 „ 400	5
401 „ 650	6
651 „ 1 000	7
1 001 and above	8

G-2.3 The containers shall be selected at random from the lot and in order to ensure the randomness of selection, the random sampling methods given in IS : 4905-1968* may be followed.

G-3. TEST SAMPLES AND REFEREE SAMPLE

G-3.1 Preparation of Test Samples

G-3.1.1 Draw with an appropriate sampling instrument a small number of the baseplates from different parts of each container selected (*see* Table 1). The total number of baseplates drawn from each container shall be thrice the quantity required to conduct the tests for all the characteristics given under 3.

G-3.1.2 Thoroughly mix all baseplates drawn from the same container. Out of these, small but approximately equal number of baseplates shall be taken from each selected container and shall be well mixed up together so as to form a composite sample. This composite sample shall be divided into three equal parts, one for the purchaser, another for the supplier and the third for the referee.

*Methods for random sampling.

G-3.2 Referee Sample — The referee sample shall consist of a composite sample marked for this purpose and shall bear the seals of the purchaser and the supplier. It shall be kept at a place agreed to between the purchaser and the supplier and shall be used in case of dispute between the two.

G-4. NUMBER OF TESTS

G-4.1 Tests for all the characteristics given in 3 shall be conducted on the composite sample.

G-5. CRITERION FOR CONFORMITY

G-5.1 The lot shall be declared as conforming to this specification if the composite sample satisfies the requirements for each of the characteristics given in 3. If the requirements for any of the characteristics are not met, the lot shall be declared to have not satisfied the requirements of the specification.

INDIAN STANDARDS

ON DENTAL MATERIALS AND ALLIED PRODUCTS

- 3571-1966 Dental gold solders
- 3578-1966 Dental gold alloy wire
- 3610-1966 Dental gold foil
- 4704-1968 Silver-tin dental amalgam alloy
- 4705-1968 Dental mercury
- 4799-1968 Dental casting gold alloys
- 5954-1970 Dental white gold alloys
- 6035-1970 Zinc phosphate dental cement
- 6036-1970 Alginate dental impression material
- 6037-1970 Zinc oxide-eugenol dental impression paste
- 6038-1970 Dental impression compound
- 6039-1970 Zinc oxide-eugenol dental cement
- 6043-1970 Copper phosphate — zinc phosphate dental cement
- 6555-1972 Dental laboratory plaster
- 6556-1972 Dental impression plaster
- 6884-1973 Dental silicate cement
- 6887-1973 Denture base polymer
- 6888-1973 Dental inlay casting wax
- 7225-1974 Dental cobalt chromium casting alloys
- 7348 (Part III)-1975 Glossary of terms relating to dentistry: Part III Dental materials
- 7425-1974 Dental casting investment for gold alloys
- 8019-1976 Dental artificial stone
- 8020-1976 Baseplate, dental
- 8021-1976 Dental sticky wax
- 8022-1976 Acrylic resin teeth